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CW#88H: SA of Rectangular Prisms & Right Cylinders

Honors Geometry

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| **CRS** | Geometry Content |
| **Objective** | Find the surface area of rectangular prisms and right cylinders |

**Exploration #1 – Surface Area!**

1) What is surface area? Is surface area the same as volume?

**Directions:** Find the surface area of the objects that were brought in. Use a ruler. Show your work and calculations below. Include units!

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| **Rectangular Prism** | |
| 1) Carefully deconstruct the rectangular prism.  a. Find the surface area of each face of the prism.  b. What is the total surface area? | 2) In the space below, draw a rough sketch of what your rectangular prism looks like when it is unfolded or deconstructed. |
| **Right Cylinder** | |
| 3) Carefully deconstruct the right cylinder. If you cannot deconstruct the cylinder, use string to find the circumference. Include units!  a. What is the surface area of one circle (the top or the base of the cylinder)? What is the surface area of both circles?  b. What is the surface area of the side of the cylinder? How can you find this?  c. What is the total surface area? | 4) In the space below, draw a rough sketch of what your right prism looks like when it is unfolded or deconstructed. |

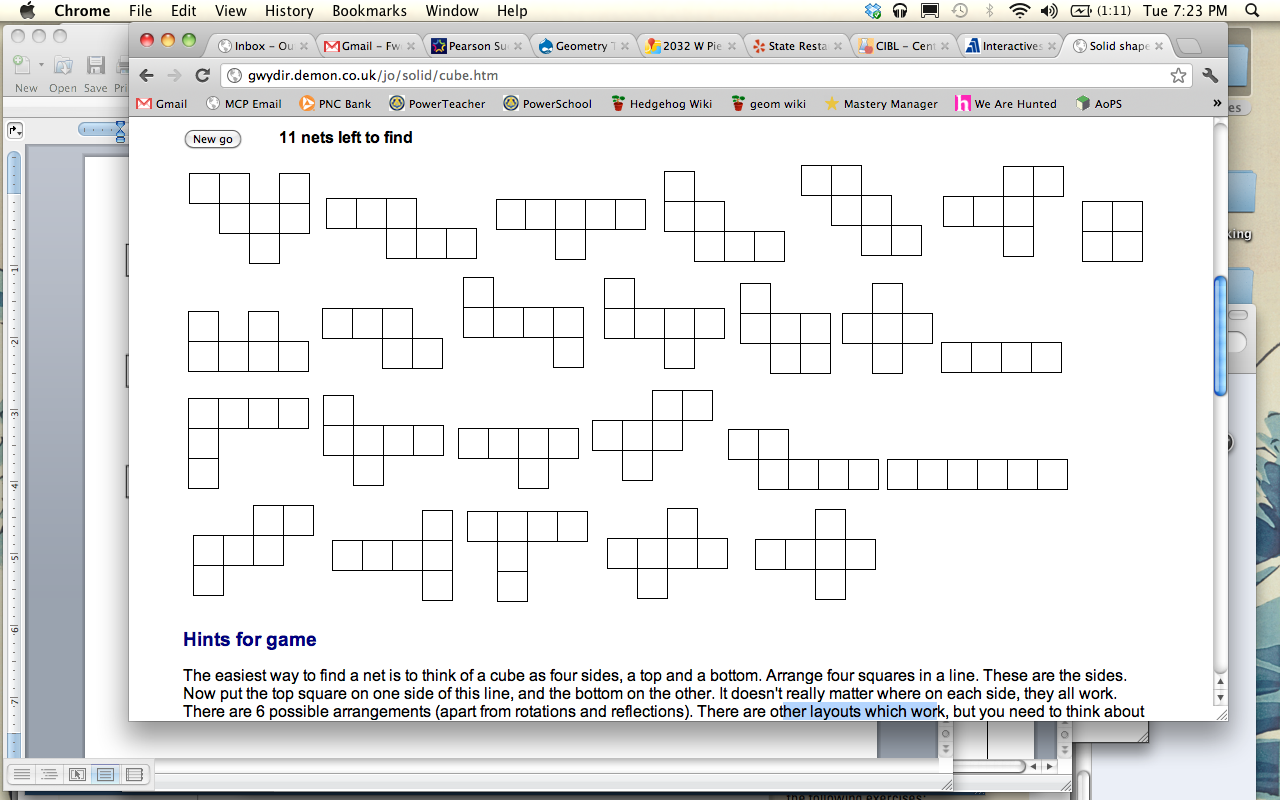
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| **Rectangular Prisms:** | |
| 5) ***Describe*** how would you find the surface are of the following. Calculate the surface area. Is there a formula?      Formula? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 6) Create ***two*** ***different*** rough sketches of nets for a rectangular prism to the left. Find the area of each face, and the surface area of each net. Is this the same as the calculations that you made to the left? |

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| **Right Cylinder** | |
| 7) ***Describe*** how you would find the surface are of the following. Is there a formula?    Formula? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 8) Create ***two*** ***different*** rough sketches of nets for a right cylinder to the left. Find the area of each face, and the surface area of each net. Is this the same as the calculations that you made to the left? |

**Exploration #2: Nets!**

1) What is a net?

2) There are eleven different ways to make the net of a cube, apart from rotations (turn it round) and reflections (turn it over). Try to catch them all! (Yes, that is a Pokemon reference).



3) Describe the characteristics of the net of a cube. Did you notice any patterns? Did you eliminate any nets? Why?

**Exploration #2 – Toilet Paper Surface Area!**

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|  | **🡨 Joke** |

**Use a ruler to measure the following:**

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| --- | --- | --- | --- | --- | --- |
|  | 1) Find the height of the roll.  **h = \_\_\_\_** |  | 2) Find the diameter of the roll.  **d (roll) = \_\_\_\_** |  | 3) Find the diameter of the cardboard.  **d (cardboard) = \_\_\_\_** |

Imagine you dip the roll of toilet paper in a bucket of paint. What parts of the roll of toilet paper would have paint on them? Use this idea to help you find the surface area of the toilet paper!

**Practice Problems:**

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| --- | --- | --- |
| 1) Find the surface area of the solid formed by the net. Round your answer to two decimal places. | 2) Find the surface area of the solid formed by the net. Round your answer to two decimal places. | 3) Find the surface area of the right prism. Round your answer to two decimal places. |
| 4) Find the surface area of the right cylinder using the given radius *r* and height *h*. Round your answer to two decimal places.  *r* = 5 cm; *h* = 15 cm | 5) Find the surface area of the right cylinder using the given radius *r* and height *h*. Round your answer to two decimal places.  *r* = 12 in.; *h* = 18 in. | 6) Solve for *x* given the surface area *S* of the right prism or right cylinder. Round your answer to two decimal places. *S = 320m2* |
| 7) Solve for *x* given the surface area *S* of the right prism or right cylinder. Round your answer to two decimal places. *S* = 1000 cm2 | 8) CHALLENGE: Find the radius of a right cylinder with a surface area of 48π square feet. The height of the cylinder is 5 feet. | 9) As a birthday present for a friend, you buy a cylindrical box of candy. The diameter of the box is 6 inches and the height is 8 inches. What is the minimum amount of wrapping paper needed to wrap the gift? Round your answer to two decimal places. |